

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/009423

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>7</sup> G01N33/53, G01N37/00, C12N15/09, C12M1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> G01N33/53, G01N37/00, C12N15/09, C12M1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2004

Kokai Jitsuyo Shinan Koho 1971-2004 Jitsuyo Shinan Toroku Koho 1996-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CA(STN), JICST(JOIS)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	JP 2002-357607 A (Olympus Optical Co., Ltd.), 13 December, 2002 (13.12.02), Par. Nos. [0031], [0032], [0034]; Figs. 4, 5 (Family: none)	1-9 10-20
X A	JP 2002-221485 A (Minolta Co., Ltd.), 09 August, 2002 (09.08.02), Par. Nos. [0034], [0052]; Fig. 1 & US 2002/064800 A	1-9, 11 10, 12-20
X A	JP 2001-326209 A (Mitsubishi Materials Silicon Corp.), 22 November, 2001 (22.11.01), Claims 2, 3; Par. No. [0001] (Family: none)	12-14, 17 1-11, 15, 16, 18-20

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search  
09 August, 2004 (09.08.04)Date of mailing of the international search report  
24 August, 2004 (24.08.04)Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	JP 2002-306154 A (Hitachi Electronics Engineering Co., Ltd.), 22 October, 2002 (22.10.02), Par. No. [0018]; Figs. 1, 4 (Family: none)	18-19 1-17, 20
A	JP 2004-501372 A (Merck Patent GmbH.), 15 January, 2004 (15.01.04), & EP 1292822 A & US 2003/161572 A & WO 01/98759 A	1-20
A	JP 2002-159285 A (Shimadzu Corp.), 04 June, 2002 (04.06.02), (Family: none)	1-20
A	JP 2002-85961 A (The Institute of Physical and Chemical Research), 26 March, 2002 (26.03.02), & US 2002/094303 A	1-20
A	JP 2001-255328 A (Hitachi Software Engineering Co., Ltd.), 21 September, 2001 (21.09.01), & EP 1132485 A & US 2002/022226 A	1-20

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**Box No. II** Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III** Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

"The special technical feature" of the inventions according to claims 1 to 7 is an organism-related molecule bio-chip in which an organism-related molecule is carried between a first member and a second member, wherein one of the first member and the second member has a plurality of grooves formed in parallel in the face contacting the other member, to thereby provide a plurality of spaces as reaction regions.

(To be continued to extra sheet.)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

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Continuation of Box No.III of continuation of first sheet (2)

"The special technical feature" of the inventions according to claims 8 to 11 is to allow molecules of a gas to permeate into a polydimethylsiloxane substrate of an organism-related molecule bio-chip which has a reaction region having an organism-related molecule carried between a first member and a second member.

"The special technical feature" of the inventions according to claims 12 to 17 is a method for modifying the surface of a silicone resin, which comprises an ozone contact step of contacting the surface of a silicone resin with ozone, and a reducing agent contact step of contacting the surface of the silicone resin with a reducing agent.

"The special technical feature" of the inventions according to claims 18 and 19 is a temperature controller for a bio-chip reaction in which a heat conducting block having a biochip placed thereon, a Peltier element contacting with the heat conducting block and a heating and heat-absorbing means are arranged in this order.

"The special technical feature" of the inventions according to claims 20 is the matter that, in a temperature controller for a bio-chip reaction having a temperature controlling section for controlling the temperature of a bio-chip having a reaction region, the bio-chip comprises an injection hole for injecting a liquid reaction mixture, a reaction region for reacting the liquid reaction mixture, an outlet for discharging the liquid reaction mixture, a first flow path for the communication of the injection hole and the reaction region and a second flow path for the communication of the reaction region and the outlet, which are provided on a substrate, and a plurality of the above temperature controlling sections are provided to thereby render a zone containing at least a part of the first flow path and a part of the second flow path to be cooled as desired and render a zone containing at least the reaction region to be heated and cooled as desired.